

Appl. No. 09/771,977
Amdt. Dated October 29, 2004
Reply to Office action of August 3, 2004
Attorney Docket No. P12291-US1
EUS/JIP/04-2147

Amendments to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for calibrating one or more amplifiers (100,200) comprising the steps of:

i) generating a noise signal (N_a+N_i) produced by said one or more amplifiers (100,200) when no input signal (S_i+N_i) is connected (Alt. 2) to at least one amplifier of said one or more amplifiers (100,200); and

ii) using said noise signal (N_a+N_i) as a calibrating signal for estimating a corresponding gain (G) of said one or more amplifiers (100,200) by measuring (600) at at least one output of said one or more amplifiers (100,200) the amount of noise (S_{tot}) of said one or more amplifiers (100,200), whereby said one or more amplifiers can be calibrated using a signal that is not the output of an oscillator.

2. (Previously Presented) A method for calibrating one or more amplifiers (100,200) according to claim 1, wherein said gain (G) is further adjusted in accordance with said calibrating signal.

3. (Currently Amended) A method for calibrating a receiver (1,2) comprising the steps of:

i) generating a noise signal (N_a+N_i) produced by one or more amplifiers (100,200) of said receiver when an input signal (S_i+N_i) is disconnected (Alt. 2) from said receiver; and

ii) using said noise signal (N_a+N_i) as a calibrating signal for estimating a corresponding gain (G) of said one or more amplifiers in said receiver by measuring (600) at the output of the receiver the amount of noise (S_{tot}) of said one or more amplifiers (100,200), whereby said one or more amplifiers can be calibrated using a signal that is not the output of an oscillator.

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4. (Previously Presented) A method for calibrating a receiver according to claim 3, wherein said gain (G) is further adjusted in accordance with said calibrating signal.

5. (Previously Presented) A calibration arrangement (1,2) comprising:
one or more amplifiers (100,200) for amplifying a radio signal (S_i+N_i);
estimating means (600) for estimating a gain (G) of said one or more amplifiers (100,200);

disconnecting said radio signal (S_i+N_i), while at least one amplifier of said one or more amplifiers (100,200) is producing a calibrating signal (N_a+N_i) as a reference signal into said estimating means (600) for estimating said gain (G) of said radio signal (S_i+N_i), wherein said calibrating signal is not the output of an oscillator.

6. (Previously Presented) A calibration arrangement (1,2) comprising:
one or more amplifiers (100,200) for amplifying a radio signal (S_i+N_i);
estimating means (600) for estimating a gain (G) of said one or more amplifiers (100,200);

wherein said calibration arrangement (1,2) further comprises:

a switching means (10,30+100) for disconnecting said radio signal (S_i+N_i), while at least one amplifier of said one or more amplifiers (100,200) is producing a calibrating signal (N_a+N_i) as a reference signal into said estimating means (600) for estimating said gain (G) of said radio signal (S_i+N_i), wherein said calibrating signal is not the output of an oscillator.

7. (Previously Presented) A calibration arrangement (1,2) according to claim 5, wherein said calibrating signal is a pure noise signal (N_a+N_i) of at least one amplifier of said one or more amplifiers (100,200).

8-9. (Cancelled)

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10. (Previously Presented) A calibration arrangement (1) according to claim 5, wherein disconnecting said one or more amplifiers (100,200) from said radio signal (S_i+N_i) by connecting at least one input of said one or more amplifiers (100,200) to a reference potential (20).

11. (Previously Presented) A calibration arrangement (1) according to claim 6, wherein said switching means (10) is disconnecting said one or more amplifiers (200) from said radio signal (S_i+N_i) by connecting at least one input of said one or more amplifiers (100,200) to a reference potential (20).

12. (Previously Presented) A calibration arrangement (1) according to claim 10, wherein said reference potential is provided by a resistance (20) [through] connected to ground.

13. (Previously Presented) A calibration arrangement (1,2) according to claim 5, wherein the calibration arrangement (1,2) further comprises:
more than one amplifier (100+200) in a chain for amplifying said received radio signal (S_i+N_i).

14. (Previously Presented) A calibration arrangement (1,2) according to claim 6, wherein said switching means (10,30+100) is disconnecting said one or more amplifiers (100,200) from said radio signal (S_i+N_i) by disconnecting at least one input of said one or more amplifiers (100,200) which is closest to an input of said radio signal (S_i+N_i).

15. (Previously Presented) A calibration arrangement (1,2) according to claim 5, wherein said calibrating signal represents a noise power ($kTBF$) from said one or more amplifiers (100,200) that comprises:

- a known Boltzman constant (k);
- a known bandwidth (B) of said noise power;

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a known noise figure of said noise power;
a measured temperature (T) of said receiver.

16. (Previously Presented) A calibration arrangement (1,2) according to claim 5, an output from the last one of said one or more amplifiers (100,200) in a chain is connected to an analog-digital-converter (400) for converting analog signals into digital signals.

17. (Previously Presented) A calibration arrangement (1,2) according to claim 15, wherein said gain (G) of said radio signal ($S_i + N_i$) is estimated from said calibrating signal ($N_a + N_i$) including said noise power (kTBF) when an output signal (S_{tot}) is measured at at least one output of said one or more amplifiers (100,200).

18. (Previously Presented) A calibration arrangement (1,2) according to claim 5, wherein said gain (G) of said radio signal ($S_i + N_i$) is estimated from said calibrating signal ($N_a + N_i$) when an output signal (S_{tot}) is measured at at least one output of said one or more amplifiers (100,200).

19. (Previously Presented) A calibration arrangement (1,2) according to claim 16, wherein said gain (G) of said radio signal ($S_i + N_i$) is estimated from said calibrating signal ($N_a + N_i$) when an output signal (S_{tot}) is measured after said analog-digital-converter (400).

20. (Previously Presented) A receiver (1,2) comprising:
means (300) for receiving a radio signal ($S_i + N_i$);
one or more amplifiers (100,200) for amplifying said received radio signal ($S_i + N_i$);
estimating means (600) for estimating a gain (G) of said receiver (12);
wherein said receiver further comprises:
a switching means (10,100) for disconnecting said received signal ($S_i + N_i$), while
at least one amplifier of said one or more amplifiers (100,200) is producing a calibrating

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signal (N_a+N_i) as a reference signal to said estimating means (600) for estimating said gain (G) of said radio signal (S_i+N_i), wherein said calibrating signal is not the output of an oscillator.

21. (Previously Presented) A receiver (1,2) according to claim 20, wherein said calibrating signal is a pure noise signal (N_a+N_i) of at least one amplifier of said one or more amplifiers (100,200).

22. (Previously Presented) A receiver (1) according to claim 20, wherein said switching means (10) is disconnecting said radio signal (S_i+N_i) by connecting at least one input of said one or more amplifiers (100) to a reference potential (20).

23. (Previously Presented) A receiver (1) according to claim 22, wherein said reference potential is provided by a resistance (20) connected to ground.

24. (Cancelled)

25. (Previously Presented) A receiver (1,2) according to claim 20, wherein the receiver (1,2) further comprises:

more than one amplifier (100+200) in a chain for amplifying said received radio signal (S_i+N_i).

26. (Previously Presented) A receiver (1,2) according to claim 20, wherein said calibrating signal represents a noise power (kTBF) from said one or more amplifiers (100,200) that comprises:

- a known Boltzman constant (k);
- a known bandwidth (B) of said noise power;
- a known noise figure of said noise power;
- a measured temperature (T) of said receiver.

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27. (Previously Presented) A receiver (1,2) according to claim 20, wherein an output from the last one of said one or more amplifiers (200) in a chain is connected to an analog-digital-converter (400) for converting analog signals into digital signals.

28. (Previously Presented) A receiver (1,2) according to claim 26, wherein said gain (G) of said received radio signal (S_i+N_i) is estimated from said calibrating signal (N_a+N_i) including said noise power (kTBF) when an output signal (S_{tot}) is measured at at least one output of said one or more amplifiers (100,200).

29. (Previously Presented) A receiver (1,2) according to claim 20, wherein said gain (G) of said received radio signal (S_i+N_i) is estimated from said calibrating signal (N_a+N_i) when an output signal (S_{tot}) is measured at at least one output of said one or more amplifiers (100,200).

30. (Previously Presented) A receiver (1,2) according to claim 27, wherein said gain (G) of said received radio signal (S_i+N_i) is estimated from said calibrating signal (N_a+N_i) when an output signal (S_{tot}) is measured after said analog-digital-converter (400).

31. (Previously Presented) A calibration arrangement (1,2) comprising:
one or more amplifiers (100,200) for amplifying a radio signal (S_i+N_i);
estimating means (600) for estimating a gain (G) of said one or more amplifiers (100,200);

disconnecting said radio signal (S_i+N_i), while at least one amplifier of said one or more amplifiers (100,200) is producing a calibrating signal (N_a+N_i) as a reference signal into said estimating means (600) for estimating said gain (G) of said radio signal (S_i+N_i), wherein disconnecting said one or more amplifiers (100,200) from said radio signal (S_i+N_i) by disconnecting a power supply (500) from at least one amplifier of said one or more amplifiers (100,200).

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32. (Previously Presented) A calibration arrangement (1,2) comprising:
one or more amplifiers (100,200) for amplifying a radio signal (S_i+N_i);
estimating means (600) for estimating a gain (G) of said one or more amplifiers (100,200);

wherein said calibration arrangement (1,2) further comprises:

a switching means (10,30+100) for disconnecting said radio signal (S_i+N_i), while at least one amplifier of said one or more amplifiers (100,200) is producing a calibrating signal (N_a+N_i) as a reference signal into said estimating means (600) for estimating said gain (G) of said radio signal (S_i+N_i), wherein said switching means (30+100) is disconnecting said one or more amplifiers (200) from said radio signal (S_i+N_i) by disconnecting a power supply (500) from at least one amplifier of said one or more amplifiers (100,200).

33. (Previously Presented) A receiver (1,2) comprising:

means (300) for receiving a radio signal (S_i+N_i);

one or more amplifiers (100,200) for amplifying said received radio signal (S_i+N_i);

estimating means (600) for estimating a gain (G) of said receiver (12);

wherein said receiver further comprises:

a switching means (10,100) for disconnecting said received signal (S_i+N_i), while at least one amplifier of said one or more amplifiers (100,200) is producing a calibrating signal (N_a+N_i) as a reference signal to said estimating means (600) for estimating said gain (G) of said radio signal (S_i+N_i), wherein said switching means (100) is disconnecting said one or more amplifiers (100,200) from said radio signal (S_i+N_i) by disconnecting a power supply (500) from at least one amplifier of said one or more amplifiers (100,200).